**Failure of Passive Transfer (FPT), Equine**

**Closure of GI tract** begins as soon as enteral intake starts; < 25% capacity left after 3 hrs; if milk is given first – gut closes faster

**Classic case** – Newborn foal, **weak at birth**, does not nurse or **nurses poorly**, -or-  
Strong foal but **dam has low or no colostrum** or **poor quality colostrum**.

**Presentation:**

**FPT is not a disease**. FPT is a common secondary problem.  
**FPT does not cause infection** in foals but it does predispose them to develop infection.  
**FPT** = inadequate serum levels of immunoglobulins measured at 18 - 24 hours of birth

Risk factors: prior probs in mare/foals – abortion, early embryonic loss; repeated breedings required

**Clinical Signs:** FPT likely when any of the following are present:

- **Mare:**
  - No/poor udder development in mare – colostrum poor quantity
  - Premature lactation – lose colostrum
  - Udder too full – foal not nursing properly

- **Foal**
  - Strong, alert but nursing too often, for short periods, seems hungry all the time; or
  - Unable to rise and nurse properly (or often enough) but otherwise alert, hungry; or
  - Sleeping more than usual, not nursing often or strongly; or
  - Obviously ill, recumbent, not nursing or
  - Meconium impaction – colostrum helps pass the sticky stuff – LOOK for FPT

**Test(s) of choice:**

- **Serum IgG** - Measure by 12 hours – so you can Rx FPT or partial FPT  
  - Low serum Ig levels in foal > 24 hours of age
  - < 400 mg/dl = failure of passive transfer
  - 400-800 mg/dl = partial failure passive transfer
  - > 800 mg/dl = normal

- **Radial immunodiffusion (RID)** = gold standard; but test takes 24 hrs

- **Foal side tests**
  - SNAP® Foal IgG test - ELISA based – IDEXX
  - Gamma-check-E®
    - Glutaraldehyde based – Plasvacc
    - NOT for obviously sick foals - ↑ fibrinogen = false positive

- **Mare tests**
  - Gamma-check-C®
    - Measures IgG in **colostrum**,  
    - Use in problem mares, high risk pregnancies, prelactation

**Foals born following dystocia are more likely to be weak. Increased risk of FPT**
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Rx of Choice:

**Early FPT diagnosis --- < 12 hrs**
- Colostrum – equine is best
  - substitute bovine colostrum in emergency
  - (some disagree – say use only equine colostrum)
- Oral IgG – often need more than label dose
- IV serum products – need much more than label dose
- Equine Plasma IV
  - Several companies
  - Hyperimmune products available – Rhodococcus, E. Coli

**Late FPT diagnosis --- after 18-24 hrs**
- Plasma transfusion IV

**Domperidone** to mare prior to parturition or post foaling if no udder development

Prevention:

1. Evaluate colostrum pre-partum;
   - Measure colostrum specific gravity (> 1.060 = good)
   - Or measure IgG
   - Or estimate colostral IgG concentration via sugar refractometer (>30% = good)
2. Closely monitor mares in the last few weeks pre-partum
3. Maintain colostrum bank –
   - 250 ml colostrum from each mare usually OK
   - A and Q negative blood types best to avoid isoerythrolysis
4. Have private, quiet, clean foaling stall/pasture
5. **BE PRESENT** at foaling
6. Monitor size of mare’s udder and foal’s attempts to nurse
7. Help foal nurse if needed BUT DO NOT interfere with mare/foal bonding, esp. in maiden mare

**Prognosis:**
FPT is very correctable with early identification and treatment.

FPT does **not always** = infection;

-but-

Good passive transfer does not always prevent infection either, so be alert.
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Pearls:
Causes of FPT
Mare factors
- Inadequate quantity or poor quality colostrum
  - Prelactation
  - Placentitis
  - Fescue ingestion in late gestation
  - Concentrating defect
  - Older mares > 15 yrs
  - Poor condition of mare
    - Malnutrition
    - Systemic illness
- Inadequate access to udder
  - Rejects foal – more often in maiden mares
  - Poor mothering instinct - doesn’t allow foal enough access

Foal factors
- Failure to ingest sufficient quantity
  - Weakness at birth
    - Prematurity/dysmaturity
    - Angular limb deformities
    - Injury at birth
    - Any illness – colic, meconium impaction, sepsis, etc
    - Colder climates, lack of sun
    - Prolonged gestation
    - Fescue ingestion by mare in late gestation
    - Dystocia
- Failure to absorb adequate immunoglobulin from colostrums
  - Malabsorption - Stress, GI disease
- Illness - ↑ metabolism and catabolism of IgG’s in spite of adequate ingestion/absorption

A note about colostral substitutes
- IV and oral commercial IgG products (NOT plasma)
  - Foals with severe FPT need much more than the label doses.
  - So, cost savings of using oral/IV IgG is lost compared to plasma.
  - Probably most useful in foals with partial FPT, that are NOT sick.
- Use IV plasma in really sick foals.
**Colostrum = Mother Nature’s Wonder Elixir**  
(adapted from Dr. J. Palmer)

- Provides passive immunity via IgG – traditional thought
- Now know – much more complex role:

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<thead>
<tr>
<th>Contains protective factors and trophic substances:</th>
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<tbody>
<tr>
<td>★ Establish healthy barrier in GIT betw luminal bacteria + mucosa</td>
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<tr>
<td>★ Target potential pathogens</td>
</tr>
<tr>
<td>Antimicrobial activity</td>
</tr>
<tr>
<td>Disrupt, inactivate, bind pathogens; inhibit attachment</td>
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<tr>
<td>★ Proper development of GIT epithelium</td>
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<tr>
<td>Epidermal growth factor, erythropoietin</td>
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<td>Anti-inflammatory Anti-inflammatory mediators</td>
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**My Notes:**